DOCUMENT RESUME

ED 112 368 CS 002 152

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TITLE Thinking About Reading.
PUB DATE May 75
NOTE 12p.; Paper presented at the Annual Meeting of the International Reading Association (20th, New York City, May 13-16, 1975)

EDRS PRICE MF-$0.76 HC-$1.58 Plus Postage
DESCRIPTORS *Beginning Reading; *Cognitive Processes; *Language Experience Approach; Reading; Reading Development; Reading Instruction; *Reading Processes; Reading Research

ABSTRACT

Cognitive confusion is the common state of young persons in regard to concepts of units of writing. In the past 10 years, research has accumulated to show that all children pass through the important stage of initial cognitive confusion in learning to read. Children often confuse "writing" with "drawing," "letter" with "number," and so on. Cognitive confusion is a natural outcome of normal environmental conditions which cannot be avoided, but if it persists too long it may prevent the child from understanding the task of learning to read. Several studies about helping children to develop language concepts have been conducted. The general key to improving this kind of concept learning is the use of the language-experience approach. Children need experiences of spoken and written language which are relevant to them and which allow them to discover the functions of reading and writing. (TS)

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Title: Thinking About Reading

Session: Research Application

Convention: International Reading Association,
New York, May 13 - 16, 1975.

AS 002 152

I'm going to sove some mivvirs. See these mivvirs.
Their names are ooth and op. They say "hgugh".
Who knows a zasp with the tauf "hgugh" in it?

What is this nonsense? It is the same kind of nonsense that young beginners hear when they are learning to read. They do not know the technical jargon teachers use to describe speech and writing. "Sove" is as good a nonsense word to them as "write". So also is "mivvirs" for "letters", "ooth" for "sea", "op" for "after", "zasp" for "word", "tauf" for "sound", and "hgugh" is the final sound of the Scottish "loch." The child must puzzle out the meanings of these technical terms. He does so by a series of hunches until he arrives at more or less the same concepts as his teacher has of these linguistic units.

In the past ten years research has accumulated to show that all children pass through this important stage of initial cognitive confusion in learning to read. Furthermore, it has been recognized that all skills have this feature. Fitts and Posner (10) reviewed all research on the psychology of skill development and found that one universal characteristic is this "cognitive phase". Whether one is learning to play tennis, or learning to fly an airplane, or to send the morse code, or to read, this cognitive phase must be mastered. One must discover what the skill is used for -- its function, and what are the important elements of the task to attend to -- the technical concepts and jargon for talking and thinking about the skill.

What is writing for?

The youngest beginners do not understand the function of writing (and print). The Russian psychologist, Vygotsky (22) seems to have

been the first to note the importance of this lack of a concept of the function of the written form of language. He states that the child "feels no need for it and has only a vague idea of its usefulness". Reid's (19) study of Scottish school beginners led to a similar conclusion. She found that they showed a general lack of any notion "of the purpose and the use of it." Replication of Reid's study in England confirmed her finding (3). Vygotsky points out how difficult it is to motivate someone to learn the written form of language when he cannot see any use for it.

The "reading instruction register"

Linguistics provides reading teachers with rigorous concepts for thinking about language. One such term is "register". It may be defined simply as a special variety of language which can be placed in a separate category by the special social circumstances and functions of its use. Thus the reading instruction register is the special language used to talk about reading and its relation to speech. Behind this register lie the concepts of language which are used in thinking about reading and the task of learning how to do it. There is already a considerable body of evidence that most school beginners do not possess either the linguistic concepts or the register. The evidence comes from several different countries, indicating the universality of this initial cognitive confusion.

In Scotland, Reid's five-year-old beginners had "a great poverty of linguistic equipment to deal with the new experiences, calling letters 'numbers' and words 'names'." In England, the present author (3) replicated Reid's intensive interviews with five-year-olds with similar results. This English study went on to test some of the findings by experimental methods. For example, children had to say whether each of

the following auditory stimuli was or was not "a word": a bell ringing, a voice saying the short e phoneme, a voice saying "milk", a voice saying "fish and chips", a voice saying "She's a funny girl". Not one of the five-year-olds tested said "Yes, it's a word" only to the stimulus "milk" -- as the reading teacher would. Not all the children made random guesses. They had hunches. For example, some showed that they thought that "a word" was any chunk of meaningful speech. This confusion seems quite natural, when one recognizes that human speech is not chopped up into words. It flows on continuously and pauses within words are sometimes longer than pauses between words. Experiments with the concept of "a sound" (phoneme) showed the same confusion. Again this is hardly surprising when one considers that speech is not segmented into phonemes. Indeed the phoneme actually does not exist as a specific speech sound. It is really an abstract category for a family of similar speech sounds.

By now there is extensive evidence that the beginner's perception of speech segments does not coincide with the units of "word" and "sound" (phoneme) in the reading instruction register used by teachers (1, 9, 12, 13, 14).

Cognitive confusion is the common state of young beginners in regard to concepts of units of writing (or print) too. Reid's Scottish study and the present author's investigations in England showed how five-year-olds confuse "writing" with "drawing", "letter" with "number", and so on. In the United States, Meltzer and Herse (16) found similar results with American first grade and kindergarten children. For example, children were required to take a pair of scissors and cut "a word" from a card with a sentence printed on it. They often cut off more than one word or only a part of a long word. In New Zealand, Clay (2) gave children two cards and asked them to slide them across a line of print

to show "just one word", "just one letter", and "just the first letter of a word". She found that only about a half of her six-year-olds could do this correctly at the end of the first year at school. Further evidence of confusion over the technical concepts of writing has been provided by Turnbull (20) in Australia and by Kingston, Weaver and Figa (15) in America.

Practical significance

The practical classroom teacher may question -- does this initial cognitive confusion matter? Won't the child pick up these concepts later anyway? The answer is that research says that progress in reading is related to an understanding of the reading instruction register, and the way reading is taught currently makes cognitive confusion a hazardous condition.

Francis (11) in her research on 50 boys and girls in a primary school in the north of England found that the highest correlation (.41) was between reading achievement and technical linguistic terms in the reading instruction register. Furthermore, when general vocabulary was statistically controlled, the correlation remained quite considerable (.34). Therefore, Francis concluded "that factors independent of a general ability to deal with abstract concepts were involved in learning technical vocabulary and that these were closely related to the reading process."

Another indication of the relevance of the reading instruction register for success in learning to read comes from a Canadian study. Downing, Ollila and Oliver (5) conducted a survey of reading readiness in kindergartens at Vancouver, B.C. They found high correlations between children's scores on a test of "the technical language of literacy" and other conventional tests of reading readiness. For example,

the correlation was .55 with a letter-names test which is generally regarded as the best predictor of first grade reading achievement.

Cognitive confusion is a natural outcome of normal environmental conditions which cannot be avoided. Speech is not segmented into the units which have to be perceived in learning to read. The act of reading cannot be observed because it goes on in the head. Therefore the child cannot observe the task of reading and imitate it (although he tries to do so). Nevertheless, cognitive confusion is hazardous because our society has created a critical period for learning to read. A successful beginning must be made at the first grade level otherwise the consequences are serious for the child. Cognitive confusion, if it persists too long, may prevent the child from understanding the task of learning to read sufficiently well to beat the deadline of the end of grade one.

The lack of adequate consideration of this problem and any general plan to help children toward cognitive clarity in the reading instruction register is shown in an observation from Francis' study: "The use of words like letter, word and sentence in teaching was not so much a direct aid to instruction but a challenge to find their meaning".

Implications from research

Cause for optimism about helping children develop language concepts and the corresponding reading instruction register is indicated by several other research studies. They show that children do strive to learn these linguistic concepts, and that their success in learning them is related to experience and training.

Reid's Scottish study and the present author's investigations in England (4) were both extended over one year. Both studies found changes in the children's concepts which indicated their striving to find the

real meaning of the linguistic terms used by their teachers. A more recent cross-sectional study in Canada established a relationship between age and the sophistication of the concept of "a spoken word" (7). Clay has shown a similar improvement with age in her New Zealand studies of the concepts of "a letter" and "a written word". Turnbull (21) in a second study in Australia has attempted to trace the natural stages in the development of the technical vocabulary of the reading instruction register.

Two studies have shown that differences in home background experiences are related to learning these technical linguistic concepts and terminology. Both studies were conducted by Downing, Ollila and Oliver (5, 6). The first found that children from Indian cultures with no literacy tradition were significantly retarded in their development of the reading instruction register in comparison with non-Indian children in the same geographical areas. The second was the survey of kindergarteners in Vancouver, B.C. Its aim was to compare youngsters from three socio-economic groups: high, medium, and low. The most important findings were: (i) that the high socio-economic children had significantly superior scores on the tests of linguistic concepts to those obtained by the other two groups; and (ii) that after six months' experience in kindergarten the children in the medium and low socio-economic groups had made considerable progress toward catching up with their high socio-economic peers.

The most significant development in techniques for training children in linguistic concepts comes from the U.S.S.R. The Soviet psychologist Elkonin (8) has created a method and materials to help children to learn the concept of a phoneme and to understand that a word is composed of a series of phonemes in a particular order in time. Ollila, Johnson and Downing (17) have taken Elkonin's Russian program and adapted it for learning phoneme discrimination in English. Experiments with Canadian

kindergarteners indicate that the adapted Russian program compares favorably with two well-known published American reading readiness programs.

Guidelines for teaching

The Canadian experiment with Elkonin's concept training technique has been so encouraging that the authors have broadened the program, applying the same principles to a variety of activities designed to teach linguistic concepts. The program is still experimental and further research on its effectiveness has yet to be completed. The principles on which the program is based provide guidelines for teachers who want to develop their own methods for improving children's cognitive clarity in learning the reading instruction register.

Teaching by simply telling is not helpful and may even worsen the problem. The child who can recite without comprehension verbal rules such as "when two vowels go walking together the first one does the talking," knows nothing about the linguistic matter this rule is supposed to explain. What is worse is that he knows that he knows nothing. A negative self-concept develops. Formal isolated drills also are not likely to help. They would be liable to obscure the concept of the functions of reading and writing.

The general key to improving this kind of concept learning is the use, for at least part of the instructional time, of the language-experience approach. The child needs experiences of spoken and written language which are relevant to him. This relevance allows him to discover the function of reading and writing. These language-experiences can be interpreted and handled by the teacher so as to provide sufficient reliable information for the child to discover for himself the concepts of the reading instruction register. For example, as the child dictates his message, he sees his speech converted into writing. The teacher talks about the

"writing" as she writes. She asks the child about "the next word" and so on. In addition, there are many ways of helping children to become aware of linguistic units in their own speaking and listening experiences.

The important psychological principle to be borne in mind throughout is Piaget's (18) dictum:

Verbal forms evolve more slowly than actual understanding.

Concept learning is a process of discovery. It is the discovery of the categories of thought used by the other people in the environment. "Rediscovering the wheel" is a derogatory expression among adults, but learning the concept of wheel literally is a matter of rediscovery. In learning the reading instruction register the child must rediscover the linguistic concepts which led to the invention of alphabetic writing.

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